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SMITH MOORE LLP			ZERVIGON, RUDY	
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1763

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/821,207

Applicant(s)

LEE ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) 78-81 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-77 is/are rejected.
- 7) ☒ Claim(s) 38 and 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/26/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-77, drawn to an apparatus, classified in class 118, subclass 719.
 - II. Claims 78-80, drawn to a method for manufacturing a superconductor, classified in class 427, subclass 62.
 - III. Claim 81, drawn to a conductor, classified in class 505, subclass 238.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process, for example, etching.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case that the product as claimed can be made by another and materially different process, for example, by a plasma deposition.

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Inventions I and III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the product as claimed can be made by another and materially different apparatus, for example, a plasma generating apparatus.

7. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

8. During a telephone conversation with Antolin on August 24, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-77. Affirmation of this election must be made by applicant in replying to this Office action. Claims 78-81 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

10. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "36" has been used to designate both "shields" and "surface heater (410; Figure 2)s". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

11. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "26" and "24" have both been used to designate "distributor". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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12. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "26" and "24" have both been used to designate "injector". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

13. Applicant is advised that should claim 38 be found allowable, claim 39 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 37-41, 56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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16. Claims 37-41 recite the limitation "tape-manufacturing system". There is insufficient antecedent basis for this limitation in the claim.

17. Claims 56 recites the limitation "the temperature regulator (c,d, 40, 49, 410; [0026]; Figure 2)". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

19. Claims 1-3, 6-13, 15, 17, 20-40, 55-57, and 62-64 are rejected under 35 U.S.C. 102(a) as being anticipated by Fischer, Diego et al. (US 20030172873 A1). Fischer teaches a chemical vapor deposition (CVD) apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) usable in the manufacture of superconducting conductor on an elongate substrate (7; Figure 2), the CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) comprising: a) a reactor (41; Figure 2); b) at least one substrate heater (49; Figure 2 - same designation as 410, section [0040]); c) at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2); d) at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2); and e) at least one gas composition monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]), as claimed by claim 1

Fischer further teaches:

- i. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the at least one gas composition monitor (19,19',19'',19''', 30; Figure 2; [0022],

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- [0026]) comprises a precursor (u,v,w,x; Figure 2; [0022], [0026]) content monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]), as claimed by claim 2
- ii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 2, wherein the precursor (u,v,w,x; Figure 2; [0022], [0026]) content monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]) comprises an oxygen content monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]), as claimed by claim 3. Applicant's claim requirement of "comprises an oxygen content monitor" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- iii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the at least one substrate heater (49; Figure 2 - same designation as 410, section [0040]) further includes at least one susceptor (48; Figure 2), as claimed by claim 6
- iv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 6, wherein the susceptor (48; Figure 2) has a radius of curvature for accommodating the elongate substrate (7; Figure 2), as claimed by claim 7

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- v. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the substrate heater (49; Figure 2 - same designation as 410, section [0040]) is a multiple-zone heater, as claimed by claim 8
- vi. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 8, further including a surface heater (410; Figure 2), as claimed by claim 9
- vii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 9, wherein the surface heater (410; Figure 2) is positioned so as to maintain a temperature at the growth surface on the substrate (7; Figure 2) at a deposition temperature, as claimed by claim 10 – Applicant’s claim limitation of “so as to maintain a temperature at the growth surface on the substrate” is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- viii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the substrate heater (49; Figure 2 - same designation as 410, section [0040]) is a single-zone (entire zone) heater, as claimed by claim 11
- ix. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 11, further including a surface heater (410; Figure 2), as claimed by claim 12

- x. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 12, wherein the surface heater (410; Figure 2) is positioned so as to maintain a temperature at a growth surface on the substrate (7; Figure 2) at a deposition temperature, as claimed by claim 13. Applicant's claim limitation of "so as to maintain a temperature at a growth surface on the substrate" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- xi. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the substrate heater (49; Figure 2 - same designation as 410, section [0040]) comprises at least one heat source, as claimed by claim 15
- xii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 15, wherein the heat source is at least one resistance heating element, as claimed by claim 17
- xiii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, further including an exhaust system (17; Figure 2), as claimed by claim 20
- xiv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 20, wherein the exhaust system (17; Figure 2) is for removing reaction products from the elongate substrate (7; Figure 2) surface, as claimed by claim 21

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- xv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 21, wherein the exhaust system (17; Figure 2) is a vacuum system, as claimed by claim 22
- xvi. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, further including a gas supply (u,v,w,x; Figure 2; [0022], [0026]), as claimed by claim 23
- xvii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 23, further including a mass flow control mechanism (19,19',19'',19'''; Figure 2), as claimed by claim 24
- xviii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 23, further including a carrier fluid supplied to the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2), as claimed by claim 25. Applicant's claim requirement of "a carrier fluid" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xix. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 25, wherein the carrier fluid is an inert gas, as claimed by claim 26. Applicant's claim requirement of "carrier fluid is an inert gas" is an intended use claim requirement.

Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- xx. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 26, wherein the inert gas is argon, as claimed by claim 27. Applicant's claim requirement of "inert gas is argon" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xxi. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 23, wherein the gas is a reactive gas, as claimed by claim 28. Applicant's claim requirement of "gas is a reactive gas" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention

generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- xxii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 28, wherein the reactive gas is one gas, as claimed by claim 29. Applicant's claim requirement of "a carrier fluid" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xxiii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 30, further including a tape handler (30; Figure 2' [0022], [0026], [0029], [0035]), as claimed by claim 30
- xxiv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 30, wherein the tape handler (30; Figure 2' [0022], [0026], [0029], [0035]) comprises a tape translation mechanism (2,3,31,31,30; Figure 2), as claimed by claim 31

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- xxv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 31, wherein the tape translation mechanism (2,3,31,31,30; Figure 2) comprises at least one of a conveyor (2,3,31,31,30; Figure 2), reel-to-reel unit, robotic translator, and combinations thereof, as claimed by claim 32
- xxvi. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, further including at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]) in communication with at least the substrate heater (49; Figure 2 - same designation as 410, section [0040]), as claimed by claim 33
- xxvii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 33, further including at least one sensor ("adjustable parameters"; [0026]) in communication with the at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]), as claimed by claim 34
- xxviii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 34, wherein at least one sensor ("adjustable parameters"; [0026]) includes any one of a flow meter, a species monitor, a filament state monitor, a deposition sensor ("adjustable parameters"; [0026]), a temperature sensor (c,d; [0026]), a pressure sensor (k; [0026]), a vacuum sensor ("adjustable parameters"; [0026]), a speed monitor (a,b; [0026]), and combinations thereof, as claimed by claim 35
- xxix. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 33, wherein the at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]) is for regulating the at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2), as claimed by claim 36

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- xxx. The tape-manufacturing system (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 33, wherein the at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]) is for regulating the at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2), as claimed by claim 37
- xxxi. The tape-manufacturing system (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 33, wherein the at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]) regulates a translational speed (a,b, [0026]) of the elongate substrate (7; Figure 2), as claimed by claim 38
- xxxii. The tape-manufacturing system (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 33, wherein the at least one controller (30; Figure 2 [0022], [0026], [0029], [0035]) regulates a translational speed (a,b, [0026]) of the elongate substrate (7; Figure 2), as claimed by claim 39
- xxxiii. The tape-manufacturing system (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) comprises a longitudinal flow distributor (411; Figure 2), as claimed by claim 40
- xxxiv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 1, further including temperature regulation system (c,d, 40, 49, 410; [0026]; Figure 2), as claimed by claim 55

- xxxv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 55, wherein the temperature regulator (c,d, 40, 49, 410; [0026]; Figure 2) further includes a plurality of temperature sensors (c,d; [0026]), as claimed by claim 56
- xxxvi. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 55, wherein the temperature regulation system (c,d, 40, 49, 410; [0026]; Figure 2) includes a heat source (49, 410; [0026]; Figure 2), as claimed by claim 57
- xxxvii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply includes a solid precursor source (u,v,w,x; Figure 2; [0022], [0026]), as claimed by claim 62. Applicant's claim requirement of "precursor supply includes a solid precursor source" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xxxviii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 62, wherein the solid precursor source (u,v,w,x; Figure 2; [0022], [0026]) is a powder, as claimed by claim 63. Applicant's claim requirement of "wherein the solid precursor source is a powder" is an intended use claim requirement. Further, it has been held that

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claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- xxxix. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, wherein the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply includes a delivery mechanism comprising one of a mill and a conveyor (2,3,31,31,30; Figure 2) when the precursor source (u,v,w,x; Figure 2; [0022], [0026]) comprises a solid, as claimed by claim 64. Applicant's claim requirement of "when the precursor source comprises a solid" is an intended use claim requirement. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Khesin; Mark J. et al. (US 6,341,519 B1). Fischer is discussed above. Fischer does not teach:

- i. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 3, wherein the oxygen content monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]) comprises a solid-state electrode, as claimed by claim 4
- ii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 4, wherein the solid-state electrode comprises YSZ, as claimed by claim 5

Khesin teaches an oxygen gas sensor including a solid-state electrode comprising YSZ (column 3; lines 15-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Khesin's oxygen sensor to Fischer's collection of sensors ("adjustable parameters"; [0026]).

Motivation to add Khesin's oxygen sensor to Fischer's collection of sensors ("adjustable parameters"; [0026]) is for control of film thickness during processing as taught by Fischer ("main parameters... reactive gas concentration"; [0005]).

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22. Claims 14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Shimamura; Hideaki et al. (US 5,707,500

A). Fischer is discussed above. Fischer does not teach:

- i. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 12, wherein the surface heater (410; Figure 2) is a lamp, as claimed by claim 14
- ii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 15, wherein the heat source comprises a plurality of lamps, as claimed by claim 16
- iii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 1, further including a shield for protecting a low-temperature region of the substrate (7; Figure 2), as claimed by claim 18
- iv. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 18, wherein the substrate (7; Figure 2) shield is positioned so that the surface temperature over the deposit coating does not exceed the deposition temperature, as claimed by claim 19

Shimamura teaches a lamp heater (25; Figure 8) and a shield (21; Figure 8) for CVD (column 6; lines 34-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Shimamura's lamp heater and shield to Fischer's apparatus.

Motivation to add Shimamura's lamp heater and shield to Fischer's apparatus is for imparting wafer temperature control as taught by Shimamura (column 15; line 54 – column 16; line 21).

23. Claims 41-44, 46, 49, 53, and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Ueki; Masao et al. (US

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4,803,947 A). Fischer is discussed above. Fischer further teaches the precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, further including a vapor delivery (conduit downstream of 18, 18', 18'', 18'''; Figure 2), as claimed by claim 53

Fischer does not teach:

- i. The tape-manufacturing system (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 40, wherein the at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) further includes a transverse lateral flow restrictor, as claimed by claim 41
- ii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 40, wherein the longitudinal flow distributor (411; Figure 2) includes an entrance, a receiver volume, a distributor, a distribution volume, and a plurality of exits, as claimed by claim 42
- iii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein the entrance is a tube, as claimed by claim 43
- iv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein the distributor is a perforated member, as claimed by claim 44
- v. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein the distribution volume is less than the receiver volume, as claimed by claim 46
- vi. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 43, wherein there is an equal volume of perforations on both sides of the tube, and the tube is substantially in the center of the injector, as claimed by claim 49

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- vii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 41, wherein the lateral flow restrictor is a physical extension of the precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2), as claimed by claim 59
- viii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 41, wherein the lateral flow restrictor is spaced relative to the substrate heater (49; Figure 2 - same designation as 410, section [0040]) in a manner to permit exhausting of reaction products from the surface of the elongate substrate (7; Figure 2), as claimed by claim 61
- ix. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 41, wherein the lateral flow restrictor is a gas curtain emanating from the injector, as claimed by claim 60.

Ueki teaches a precursor injector ("gas jetting portions"; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 46, wherein the longitudinal flow distributor (upper baffle; Figure 7) includes an entrance (702; Figure 7), a receiver volume (first exit of 702; Figure 7), a distributor (top baffle; Figure 7), a distribution volume (volume below first baffle; Figure 7), and a plurality of exits (704; Figure 7), and a transverse lateral flow restrictor (lower baffle; Figure 7).

Ueki further teaches:

- i. The precursor injector ("gas jetting portions"; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 42, wherein the entrance (702; Figure 7) is a tube, as claimed by claim 43

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- ii. The precursor injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 42, wherein the distributor (top baffle; Figure 7) is a perforated member, as claimed by claim 44
- iii. The precursor injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 42, wherein there is an equal volume of perforations on both sides of the tube, and the tube is substantially in the center of the injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66), as claimed by claim 49
- iv. The precursor injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 41, wherein the lateral flow restrictor (lower baffle; Figure 7) is a physical extension of the precursor injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66), as claimed by claim 59
- v. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 41, wherein the lateral flow restrictor (lower baffle; Figure 7) is a gas curtain emanating from the injector, as claimed by claim 60.
- vi. The precursor injector (“gas jetting portions”; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) according to Claim 41, wherein the lateral flow restrictor (lower baffle; Figure 7) is spaced relative to the substrate heater heater (205a-e; Figure 2) in a manner to permit exhausting of reaction products from the surface of the elongate substrate (7; Figure 2), as claimed by claim 61

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Fischer's precursor injector (412; Figure 2) with Ueki's precursor injector ("gas jetting portions"; Figure 7; upper and lower plenum of 702; column 15, lines 35-66).

Motivation to replace Fischer's precursor injector (412; Figure 2) with Ueki's precursor injector ("gas jetting portions"; Figure 7; upper and lower plenum of 702; column 15, lines 35-66) is for uniformly forming semiconductor films as taught by Ueki (column 21, lines 52-59).

24. Claims 45-48, 50-52, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Ueki; Masao et al. (US 4,803,947 A) and Chang; Mei et al. (US 4,854,263 A). Fischer and Ueki are discussed above. Fischer and Ueki do not teach:

- x. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 44, wherein the perforated member has a density of between about 1 and about 10 holes per inch, as claimed by claim 45
- xi. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein the distribution volume is less than the receiver volume, as claimed by claim 46
- xii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein the receiver volume is greater than a total volume of perforations in the perforated member, as claimed by claim 47
- xiii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 42, wherein a total volume of the perforations is greater than the distribution volume, as claimed by claim 48

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- xiv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 49, wherein the volume of perforations increases with an increasing direction from the tube, as claimed by claim 50
- xv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 50, wherein the volume of perforations is increased by increasing the diameter of the perforations, as claimed by claim 51
- xvi. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 50, wherein the volume of perforations is increased by increasing the thickness of the perforated member, as claim by claim 52
- xvii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 53, wherein a volume of the vapor delivery is greater than the receiver volume, as claimed by claim 54

Chang teaches a gas distribution plate (30; Figure 4) and holes (31; Figure 4,5). Inclusive, Chang teaches optimized process gas hole distributions (column 5, line 60 – column 6, line 28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the relative dimensions of Ueki's process gas hole distributions and apparatus dimensions as taught by Chang.

Motivation to optimize the relative dimensions of Ueki's process gas hole distributions and apparatus dimensions is for more efficient use of deposition gases as taught by Chang (column 5, line 65 – column 6, line 2). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose ,

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220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

25. Claims 65-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Yuuki, Akimasa et al. (US 5,776,254 A). Fischer is discussed above. Fischer does not teach Fischer's precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) usable with Fischer's reactor (41; Figure 2) of Fischer's chemical vapor deposition (CVD) apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) in combination with Fischer's substrate heater (49; Figure 2 - same designation as 410, section [0040]), precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) and usable in the manufacture of superconducting conductor on an elongate substrate (7; Figure 2), the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) comprising: a) at least one precursor source (u,v,w,x; Figure 2; [0022], [0026]); b) Fischer's at least one delivery mechanism including at least one assist vehicle (2,3,31,31',30; Figure 2); c) at least one vaporizer for vaporizing Fischer's precursor (u,v,w,x; Figure 2; [0022], [0026]) provided by at least the at least one precursor source (u,v,w,x; Figure 2; [0022], [0026]); and d) at least one vehicle (19,19',19'',19''', 30; Figure 2; [0022], [0026]) for transporting at least the vaporized precursor (u,v,w,x; Figure 2; [0022], [0026]) from the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply to the precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) of the CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract), as claimed by claim 65

Fischer further does not teach:

- i. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) according to Claim 65, at least one assist vehicle (2,3,31,31,30; Figure 2) comprises an assist fluid, as claimed by claim 66. Applicant's claim 66 requirement of "comprises an assist fluid" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- ii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) according to Claim 66, wherein the assist fluid comprises an inert gas, as claimed by claim 67. Applicant's claim 67 requirement of "the assist fluid comprises an inert gas" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re

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Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- iii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x, 19, 19', 19'', 19'''; 18, 18', 18'', 18'''; Figure 2) according to Claim 67, wherein the inert gas is argon, as claimed by claim 68. Applicant's claim 68 requirement of "the inert gas is argon" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- iv. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x, 19, 19', 19'', 19'''; 18, 18', 18'', 18'''; Figure 2) according to Claim 65, wherein the precursor source (u,v,w,x; Figure 2; [0022], [0026]) is a liquid, as claimed by claim 69. Applicant's claim 69 requirement of "the precursor source is a liquid" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed

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invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

- v. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x, 19, 19', 19'', 19'''; 18, 18', 18'', 18'''; Figure 2) according to Claim 69, wherein the liquid is a solution of THS and thd, as claimed by claim 70. Applicant's claim 70 requirement of "the liquid is a solution of THS and thd" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- vi. Fischer's precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x, 19, 19', 19'', 19'''; 18, 18', 18'', 18'''; Figure 2) according to Claim 65, wherein the delivery mechanism comprises a pump when Fischer's precursor source (u,v,w,x; Figure 2; [0022], [0026]) comprises a fluid, as claimed by claim 71
- vii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x, 19, 19', 19'', 19'''; 18, 18', 18'', 18'''; Figure 2) according to Claim 65, wherein the at least one vehicle comprises a carrier fluid, as claimed by claim 72. Applicant's

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claim 72 requirement of “comprises a carrier fluid” is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- viii. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) according to Claim 72, wherein the carrier fluid comprises an inert gas, as claimed by claim 73. Applicant's claim 73 requirement of “the carrier fluid comprises an inert gas” is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

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- ix. The precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2) according to Claim 73, wherein the inert gas comprises argon, as claimed by claim 74. Applicant's claim 74 requirement of "the inert gas comprises argon" is a claim requirement of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- x. A chemical vapor deposition (CVD) apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) usable in the manufacture of superconducting conductor on an elongate substrate (7; Figure 2), the CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) comprising: Fischer's reactor (41; Figure 2); at least one substrate heater (49; Figure 2 - same designation as 410, section [0040]); and at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) supply system (u,v,w,x,19,19',19'',19'''; 18,18',18'',18'''; Figure 2); at least one precursor source (u,v,w,x; Figure 2; [0022], [0026]), at least one Fischer's delivery mechanism including at least one assist vehicle (2,3,31,31,30; Figure 2); at least one vaporizer for vaporizing Fischer's precursor (u,v,w,x; Figure 2; [0022], [0026]) provided by at least the at least one precursor source (u,v,w,x; Figure 2; [0022], [0026]); and at least one vehicle (19,19',19'',19''', 30; Figure 2; [0022], [0026]) for transporting

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at least the vaporized precursor (u,v,w,x; Figure 2; [0022], [0026]) from the precursor (u,v,w,x; Figure 2; [0022], [0026]) supply to the precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) of the CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract); at least one precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2); and at least one gas composition monitor (19,19',19'',19''', 30; Figure 2; [0022], [0026]), as claimed by claim 75

Yuuki teaches a CVD delivery mechanism comprising a pump (74; Figure 7), a vaporizer (4; Figure 7), and a carrier fluid supply (1; Figure 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Yuuki's delivery mechanism to Fischer's apparatus.

Motivation to add Yuuki's delivery mechanism to Fischer's apparatus is for improving deposited film properties by improving the process material delivery as taught by Yuuki (column 4, lines 60-67).

26. Claims 76 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Yuuki; Akimasa et al. (US 5,776,254 A) and Shimamura; Hideaki et al. (US 5,707,500 A). Fischer and Yuuki are discussed above. Fischer and Yuuki do not teach:

- i. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 75, further including a shield for protecting Fischer's low-temperature region of the substrate (7; Figure 2), as claimed by claim 76

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- ii. The CVD apparatus (Figure 2; [0040]-[0045] - PECVD, abstract) according to Claim 76, wherein the substrate shield is positioned so that the surface temperature over deposit coating does not exceed the deposition temperature, as claimed by claim 77

Shimamura teaches a shield (21; Figure 8) for CVD (column 6; lines 34-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Shimamura's lamp heater and shield to Fischer's apparatus.

Motivation to add Shimamura's lamp heater and shield to Fischer's apparatus is for imparting wafer temperature control as taught by Shimamura (column 15; line 54 – column 16; line 21).

27. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer, Diego et al. (US 20030172873 A1) in view of Tanaka; Masato (US 4,924,800 A). Fischer is discussed above. Fischer does not teach Fischer's precursor (u,v,w,x; Figure 2; [0022], [0026]) injector (412; Figure 2) according to Claim 55, wherein Fischer's temperature regulation system (c,d, 40, 49, 410; [0026]; Figure 2) includes a cooler, as claimed by claim 58.

Tanaka teaches a temperature regulation system (32, 33, 41, 43, 51, 52; Figure 7) includes a cooler (51, 52; Figure 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Tanaka's temperature regulation system to Fischer's temperature control system.

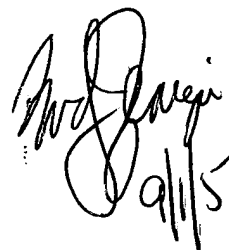
Motivation to add Tanaka's temperature regulation system to Fischer's temperature control system is for substrate temperature control as taught by Tanaka (column 4; lines 20-30).

Conclusion

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571)

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272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

A handwritten signature in black ink, appearing to read "Parviz Hassanzadeh", with the date "9/1/15" written below it.